

WHAT IS CLAIMED:

SubA 1 A circuit for determining the polarity of an on hook voltage between the tip and ring of a telephone, said circuit comprising:

5 a charge storage device for storing charge for a first time period in response to a voltage presented across terminals of a telephone while said telephone is in the on hook state;

a switch for causing the charge storage device to periodically discharge for a second time period, the second time period being less than the first predetermined time period; and

a latch for capturing a reversal of polarity of said voltage.

2. The circuit of claim 1 wherein said first predetermined time period is approximately 2.5 ms. and wherein said second predetermined time period is approximately 2 microseconds.

3. The circuit of claim 1 wherein the charge storage device is a capacitor and the discharge from said capacitor is used to generate a current through an optocoupler.

4. The circuit of claim 1 wherein said latch comprises at least one flip flop.

5. The circuit of claim 1 comprising two of said latches, two of said charge storage devices, and two of said optocouplers, one of each of the foregoing elements being arranged to detect positive voltage changes, and one of each of the foregoing being arranged to detect negative voltage changes.

6. A method of detecting polarity changes in a voltage present across tip and ring terminals of a telephone network, the method comprising:

20 repeatedly charging, for a predetermined first period, a charge storage device with the voltage presented across the tip and ring interface;

periodically discharging the stored charge for a predetermined second period;

latching information conveyed by the discharge in order to ascertain data conveyed by a

change in polarity of the voltage presented across the tip and ring.

7. The method of claim 6 wherein said predetermined second period is shorter than said predetermined first period.

8. The method of claim 7 wherein the predetermined first period is approximately 3  
5 milliseconds and the predetermined second period is approximately 2 milliseconds.

9. Apparatus for detecting information conveyed by changes in polarity of a signal, said apparatus comprising:

means for periodically charging a capacitor for a first predetermined time period,

means for periodically discharging said capacitor for a second predetermined time period,

means for driving a current through an optical coupler in response to said discharge, and

a latch configured to measure an electrical signal produced by said discharge, and to latch  
that state for later use in decoding information.

10. Apparatus of claim 9 wherein said capacitor is approximately 500 picofarads.

11. Apparatus of claim 10 wherein said first and second predetermined time periods are 3  
5 milliseconds and 2 microseconds respectively.

12. Apparatus of claim 10 connected to tip and ring terminals of a telephone network.

13. Apparatus of claim 12 further comprising at least one zener diode connected between said  
tip and ring terminals.

14. Apparatus of claim 10 further comprising an OR logic gate connected to a signal input to said  
20 latch for indicating when said signal is valid.

15. Apparatus of claim 14 wherein said optical coupler is connected in series with a resistor.

16. Apparatus of claim 15 wherein the resistor is approximately 10 kilo ohms.